DOCUMENT RESUME

ED 284 179 CS 008 867

AUTHOR Koehler, Linda J. S.; Lloyd, Lyle L.
TITLE Using Fingerspelling/Manual Signs to Facilitate Reading and Spelling.
PUB DATE Sep 86
NOTE 15p.; Paper presented at the Biennial Conference of the International Society for Augmentative and Alternative Communication (4th, Cardiff, Wales, September 22-24, 1986).
PUB TYPE Information Analyses (070) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Dyslexia; Elementary Education; *Finger Spelling; *Manual Communication; Phoneme Grapheme Correspondence; *Reading Instruction; Reading Research; Sign Language; *Spelling Instruction; Teaching Methods; Visual Learning; Vocabulary Development

ABSTRACT

Research indicates that using the manual alphabet in classes of non-deaf students is effective both for spelling and vocabulary instruction. Teachers appreciate the way signing physically involves the students, acts as a self-cueing system, is inexpensive, and helps with writing problems like "b" and "d" reversals. Other advantages are: (1) it is easier to attend to visual symbols than to auditory ones in a noisy environment; (2) there is greater consistency in representation of visual/manual symbols than auditory/vocal symbols; (3) the temporal duration of visual symbols can be adjusted with little distortion; and (4) visual/manual signs are more easily associated with visual referents than are spoken symbols. Research on the effects of fingerspelling on phonemic awareness and reading/spelling shows that it can help learners segment syllables into sounds. Fingerspelling is useful for helping dyslexic children (and illiterate adults) in non-English speaking countries, as is shown by studies conducted in Belgium, Portugal, and Sweden as well as in the United States and the United Kingdom. Fingerspelling has been shown to be of more benefit than traditional phonics instruction, because the visual cues reinforce the separate sound segments, and it benefits reading because of its time orientation--it shows learners the importance of sequencing of sounds or letters. Another advantage of fingerspelling is that it helps with memory drills. (A bibliographic listing of the literature reviewed is included.) (SKC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ED284179

USING FINGERSPELLING/MANUAL SIGNS TO FACILITATE READING AND SPELLING

(Paper presented at the Fourth Biennial Conference of the International Society for Augmentative and Alternative Communication, September 22-24, 1986, Cardiff, Wales, United Kingdom)

Linda J. S. Koehler, Ph.D.
Assistant Professor of Language Arts and Special Education, Central Missouri State University
Post-doctoral Fellow, Purdue University

Lyle L. Lloyd, Ph.D.
Professor of Special Education
Professor of Audiology and Speech Sciences
Purdue University

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

L.J.S. Koehler

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

BEST COPY AVAILABLE

CS008867

USING FINGERSPELLING/MANUAL SIGNS TO FACILITATE READING AND SPELLING

In the early 1970s Nora Walker was assigned a class of 13, 8th grade boys. They were unruly. They had serious reading problems. She set their textbooks aside and began with the first four letters of the manual alphabet. These signed symbols, which closely represented their written counterparts, brought enthusiasm to the class. Manual symbols then became the base for their reading and writing program. From letters and sounds, to words, to signed sentences, they moved to new reading materials and a greater interest in school.

Similar experiments using fingerspelling and manual signs for reading and spelling instruction have been tried with other non-deaf students in the United States. Four of these reports address spelling, 11 address reading vocabulary. Whereas the studies by Gierut and Hafer are doctoral dissertations, most accounts are anecdotal; but all conclusions are favorable concerning this intervention. If you scan the last column, you'll note that manual sign intervention reportedly improved spelling, number of vocabulary words learned (and remembered), and reading comprehension.

Insert Table 1 about here

The general mood of these accounts is one of enthusiastic support. They are punctuated by insights added by teachers and students. Like Nora Walker's report, almost all mention the motivational aspect of introducing signing into the reading/spelling program. Students who are

REPORTS OF FINGERSPELLING AND MANUAL SIGNS TO FACILITATE READING AND SPELLING

AUTHOR(S)	POPULATION	INTERVENTION	DESIGN AND DURATION	SIGNIFICANT FINDINGS
Brookner & Murphy, 1975	a severely retarded 13-year-old boy, with aphasia	Association Method with Seeing Essential English for signing, reading & writing	case study, 9 months	After 9 mos., vocabulary increased from 47 to 160 words that he could sign, read & write
Walker, 1977	13 Junior High boys avg IQ, 3-5 year reading lag	fingerspelling for sight vocabulary and spelling	instructional description for academic year	Visual memory for words improved. Some students moved to "avg" classes
Wulz & Hollis 1979	5 severely retarded 18-21 year old subjects	Signing Exact English, pictures and symbols for reading comprehension (single word)	single-subject	Simultaneous presentation of two language stimuli (manual signs & speech) may facilitate the reading of orthographic symbols
Drew, 1979 (cited in Gierut)	a gifted, non-reading third grader	simultaneous presentation of sign (Signing Exact English), printed word and spoken word	case study	Student became a proficient reader
Vernon, Coley, & DuBois, 1980	L.D. students from 3 resource rooms exhibiting poor spelling skills	fingerspelling for spelling instruction	instructional description	All scored 100% when allowed to fingerspell.
DuBois, 1980 (cited in Gierut)	5 L.D. students in a resource room	signs paired with sight words	Pre-intervention word retention compared with post-intervention	Sight word retention went from 5 to 7 words to 39 out of 40.
Holmes & Holmes, 1980	a 6-month old non-handicapped infant	simultaneous presentation of speech with fingerspelling/ manual signs	an 11-month case study comparing language acquisition with 18 age-matched controls	2-year-old capable of "reading and spelling" with manual letters.

AUTHOR(S)	POPULATION	INTERVENTION	DESIGN AND DURATION	SIGNIFICANT FINDINGS
Durst, 1982 (cited in Greenberg)	visually-impaired students with L.D.	manual signs and fingerspelling for Braille reversals and word recognition	anecdotal account of success	Students expanded reading vocabulary and braille reversals were reduced.
McKnight, 1982 (cited in Greenberg)	10 L.D. students, ages 7 to 10	manual signs for non-phonetic sight word recognition, fingerspelling for phonetic words & inflections	progress measured by pre and post-test scores on WRAT	6 to 12 months reading progress made in 9 mos. 3 students learned the Dolch sight words "quickly and correctly"
Gierut, 1984	110 L.D. and non-handicapped children from grades 1, 2, & 3.	simultaneous presentation of printed word, spoken word and signed word versus direct instruction	pre-test, post-test & post-check on sight word recall	Sign group students (L.D. & regular) recalled significantly more words than the non-sign group (L.D. & regular students).
Hafer, 1984	9 L.D. students ages 6-10 years, with rdg. difficulties and aud. processing deficits	manual signs and fingerspelling for sight words	multiple replication of ABA single subject design, 10 weeks	6 students learned more words during signing intervention than during tracing. Others showed improvement tendency.
Blackburn, Bonvillian, & Ashby, 1984	2 14-year-old boys with a 4-yr. reading lag WISC-R scores 80-89	fingerspelling and Am. Sign Lang. (phoneme linked to a signed key word)	five month intervention (35 min/wk) to improve rdg.	Both boys showed 8-11 mos. improvement in vocabulary & 6 mos. improvement in comprehension (Gates-MacGinitie)
Carney, Cioffi, & Raymond, 1985	reading disabled	manual signs (American Sign Language) to facilitate sight word acquisition	anecdotal report of a successful lesson plan sequence	Suggest that signs help increase "imageability" of a VAKT system. Recommends its use for mildly handicapped children when conventional methods fail.

turned-off of reading suddenly find it fun. Their self-image is enhanced because they know a secret code.

Teachers like the physical involvement of the students. Signing holds their attention longer, and the teacher can monitor several responses at the same time. For instance when a sight word card is shown, all signed responses can be checked by the teacher.

Some teachers find students using the signs for a self-cueing system. One student miscalled a word, signed it, then corrected herself. Other students point to the words with their non-dominant hand and fingerspell with their dominant hand.

Furthermore, teachers like it being an unaided system-that is, it doesn't require any physical devices; it's inexpensive; it can supplement most reading and spelling textbooks; and it doesn't require one-on-one supervision.

Other teachers find it helpful in alleviating specific problems such as "b" and "d" reversals. Teachers remind students to look at their hand. The right-hand "b" sign, laid on the paper, shows the line and circle relationship. Signs can signal sound omissions and inflectional endings. For instance the possessive "s" in the phrase "the mother's cat" can be unobtrusively cued to the child by a twist of "s" fist.

Other significant advantages of manual signs in general are noted by Lloyd and Karlan (1984). These authors note:

1. It might be easier to attend to visual symbols than to auditory symbols in a noisy environment.

2. There appears to be greater consistency in representation of visual/manual symbols than auditory/vocal symbols.

3. The temporal duration of visual symbols can be adjusted with less distortion than auditory symbols.

4. Visual/manual signs are more easily associated with visual referents than are spoken symbols.

Despite ten years of successful experiences, there have been relatively few attempts at objective research. We have many questions that need answering--which children, with which problems, with what degree of severity, can be helped with which manual signs, for what skills, at which stage of their reading and writing development? Unfortunately, the typical rationale for using a manual sign approach has been the purported success of the Fernald and Orton-Gillingham VAKT (or visual-auditory-kinesthetic-tactile) writing methodologies. Teachers claim that manual signing is a more interesting variation of the VAKT method. It is quicker and not as boring as repeated writing. This rationale is tenuous because at least two reviews, one by Myers (1978) and other by Tarver and Dawson (1978) show conflicting evidence as to the effectiveness of these VAKT interventions.

Nevertheless, we must be convinced that fingerspelling and manual signs do have a role to play in existing literature on reading problems before further research interest can be generated. So we turn now to the question: What are the major characteristics and needs of children experiencing serious reading deficiencies?

Phonemic Awareness and Reading/Spelling

The ability to segment sentences into words, words into syllables and syllables into sounds (or phonemes) is important to reading and writing. Of these skills, the latter, phonemic segmentation (isolating the speech sounds) is particularly important.

Boder (1973) classified the 107 students with dyslexia in their UCLA clinic; Vellutino (1979) looked at students across 20 of their experiments; and Richardson (1984) reflected on his past three years of treating children with dyslexia. They all noted that the majority of their clients, up to 90% in Boder's study, had difficulty segmenting the sounds in words, and then associating these sounds with letter representations. Indications lead us to suspect that this problem is only related to symbolic representation of speech. Vellutino (1975) demonstrated that these children were capable of applying code rules; their difficulty surfaced with the processing of verbal material. Morais et al (1984) found that the problem was not one of auditory differentiation because their dyslexic students performed normally in a non-verbal task of segmenting non-speech sounds (musical tones). Interestingly this phenomena is not limited to the idiosyncrasies of English. It seems important to reading and writing other languages as well. So when I had a choice of studies to report, I tried to have a variety of countries represented.

Morais and colleagues (1984) in Belgium found that young dyslexic children (6 to 9 years old) were impaired in speech segmentation skill even though their reading instruction was based on phonics. One suspects then that traditional letter/sound instructional programs may

not prevent the problem from occurring or cure it if its already present.

Lundberg, Olofsson & Wall (1980) in Sweden assessed a range of verbal skills of 4 and 5-year-old children. Two years later reading and spelling achievement tests were given. They found that two skills predicted more than 70% of the children scoring within the extreme quartiles. Their conclusion states "The most invariant and important determinant of basic reading and spelling skills was word analysis"--specifically ability first, to segment words into phonemes and secondly, to reverse phonemes. The segmentation task required the child to identify a picture vocally, isolating the individual sounds. The phoneme reversal task required the child to make a new word from the stimulus word by reversing the phonemes. For example, in English, "top" would become "pot."

In rural Portugal, Morais and colleagues (1979) observed that the adults who passed the literacy course performed better on measures of phoneme segmentation than those who had taken the course but failed to pass. Did this skill deficiency prevent these adults from learning to read? Regardless, the finding indicates that phoneme segmentation does not improve automatically through the use of speech. Adults with much experience using speech sounds still had difficulty isolating them in words. The same adults had difficulty reading.

A noteworthy study was reported by Bradley and Bryant (1983) of the United Kingdom. They identified, then trained children with poor phonological awareness skills. The deficient children were then assigned to one of four groups (two experimental and two control

groups). The second experimental group, using the plastic alphabet letters with their training, performed significantly better than the other three groups in the school's final spelling test and better than both control groups in the two reading tests.

Up to this point we can tentatively draw several conclusions. Deficiency in phonemic segmentation skills appears to be a primary problem with people who are experiencing reading and spelling deficiencies. Traditional phonics intruction may not prevent the problem from occurring. Phonemic segmentation ability appears to predict later reading and spelling achievement for people who are experienceing reading and spelling deficiencies. Phonemic awareness does not seem to improve with speaking experience alone. However, specific phonological remediation may improve reading and spelling performance.

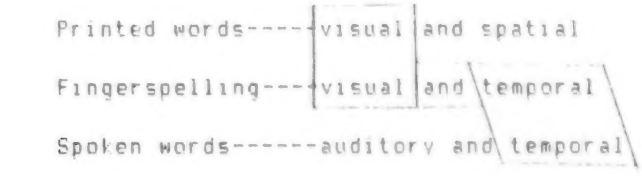
Whereas Bradley and Bryant reported the value of using alphabet letters, Elkonin (1973) in the U.S.S.R. found that tasks supported with visual aids and motor involvement greatly improved children's performance. The stimulus was a picture with a row of squares beneath it. Each square corresponded to a speech sound. The children were told to place a token in each as they came to the phoneme. Our English word "cat" would have three squares below it. The visual presence of the squares seemed to help the children focus on the separate sounds as did the motor act of setting the token down. Later, Lewkowicz (1980) thought it just as beneficial to tap each square while saying each phoneme. Another intervention to segment a word sound into its phonological components was suggested by Liberman and Shankweiler (1985). It

involved presenting target words in such a way to emphasize the separate phonemes. For example, the single sound pulsation for the word "drag" becomes four pulsations "duh-ruh-ah-guh." The authors regretted the distortion but did not have a better suggestion.

At this point one can't help but wonder if fingerspelling couldn't be used to achieve the same results as above. It uses representative alphabet letters, it provides a visual cue, it involves the child motorically and, when used while speaking, shows the separate letter-sounds without auditory distortion.

Let's view fingerspelling from another angle now. Meaning of printed material is unlocked through a spatial decoding process. This spatial decoding is different for graphs, charts and narratives. An important skill in narrative decoding is the ability to sweep sequentially through each word from left to right. In a sense, we bring a temporal, sequential organization to spatial material. This temporal ordering is critical to reading and spelling. It helps the child read "was" instead of "saw." Because fingerspelling is also a temporal process, it may serve to reinforce the temporal ~~nature~~ of sounds/in words.

Let me propose the following as a model to describe the processing function of fingerspelling.



Printed words are spatial and visual in representation; fingerspelling is temporal and visual; speech is temporal and auditory.

Thus, fingerspelling may provide a temporal dimension to printed words and a visual dimension to spoken words, thereby providing the necessary link between spoken and written words. This link may enable a person to decode printed words into speech as done in beginning reading and conversely encode spoken words into print as in spelling.

Mnemonic Intervention

Another body of research that could be explored in relation to our interest in manual signs is mnemonic instruction. This is a systematic procedure used to enhance learning and memory. In a variety of studies, Mastropieri and colleagues (1985), repeatedly found mnemonic instruction significantly superior to paired associate learning and direct instructional strategies involving drill and repetition. The approach is described as a three-stage procedure involving stimulus recoding, semantic relating, and systematic retrieval of information. Recoding sight words into representative signs, which often have semantic relationship to referents, and then practicing the retrieval process may be what facilitates vocabulary learning and retention in previously cited reports. Gierut (1984) noted superior word retention for both learning disabled and regular students when signs were presented with printed words.

Summary

As is the case with many good ideas, there is a stage of experimentation before careful scrutiny. It seems appropriate now to bring truth to our tales of success. I believe it is time to scrutinize fingerspelling as an augmentative intervention for developing phonemic segmentation skills and to scrutinize manual signs as a mnemonic

technique to enhance sight word learning and retention. We still are left with our previous questions of which children, with which signs etc. but there appear now to be links between current research literature and intervention using fingerspelling and manual signs.

REFERENCES

Aaronson, D., & Ferres, S. (1984). A structure and meaning based classification of lexical categories. In S. J. White & V. Teller (Eds.), Discourses in reading and linguistics (pp. 21-58). Annals of the New York Academy of Sciences, Vol. 433.

Baddeley, A. D., Ellis, N. C., Miles, T. R., & Lewis, V. J. (1982). Developmental and acquired dyslexia: A comparison. Cognition, 11, 185-199.

Blackburn, D. W., Bonvillian, J. D., & Ashby, R. P. (1984). Manual communication as an alternative mode of language instruction for children with severe reading disabilities. Language, Speech, and Hearing Services in Schools, 15, 22-31.

Boder, E. (1973). Developmental dyslexia: A diagnostic approach based on three atypical reading-spelling patterns. Developmental Medicine and Child Neurology, 15, 663-685.

Bradley, L., & Bryant, P. E. (1983). Categorizing sounds and learning to read--a causal connection. Nature, 301, 419-421.

Brookner, S. P., & Murphy, N. D. (1975). The use of a total communication approach with a nondeaf child: A case study. Language, Speech and Hearing Service in Schools, 6, 131-139.

Carney, J. J., Cioffi, G., & Raymond, M. W. (1985). Using sign language for teaching sight words. Teaching Exceptional Children, 17, 214-217.

Content, A., Morais, J., Alegria, J., & Bertelson, P. (1982). Accelerating the development of phonetic segmentation skills in kindergartners. Cahiers de Psychologie Cognitive, 2, 259-269.

Critchley, M. (1970). The Dyslexic Child. Springfield, IL: Charles C. Thomas.

Drew, M. (1979, December). On using methods and materials for the physically disabled with the learning disabled. Kappa Delta Pi RECORD, 45-47.

Ehri, L. C. (1984). How orthography alters spoken language competencies in children. In J. Downing & R. Valtin (Eds.), Language Awareness and Learning to Read (pp. 119-147). New York: Springer-Verlag.

Elkonin, D. B. (1973). U.S.S.R. In J. Downing (Ed.), Comparative Reading. New York: Macmillan.

Fox, B., & Routh, D. K. (1980). Phonemic analysis and severe reading disability in children. Journal of Psycholinguistic Research, 9(2), 115-119.

Gierut, M. K. T. (1984). Total communication technique effects on sight word acquisition with primary regular and learning disabled students (Doctoral dissertation, Northern Illinois University, 1983). Dissertation Abstracts International, 45, 1134.

Hoot (1985).

Greenberg, J. C., Vernon, M., DuBois, J. H., & McKnight, J. C. (1982). The Language Arts Handbook: A Total Communication Approach. Baltimore, MD: University Park Press.

Hafer, J. C. (1985). The effect of signing as a multisensory technique for teaching sight vocabulary to learning disabled hearing students (Doctoral dissertation, Univeristy of Maryland, 1984) Dissertation Abstracts International, 46, 1577A.

Holmes, K. M., & Holmes, D. W. (1980). Signed and spoken language development in a hearing child of hearing parents. Sign Language Studies, 28, 239-253.

Lewkowicz, N. K. (1980). Phonemic awareness training: What to teach and how to teach it. Journal of Educational Psychology, 72(5), 686-700.

Liberman, I. Y., & Shankweiler, D. (1979). Speech, the alphabet, and teaching to read. In L. Resnick & P. Weaver (Eds.), Theory and Practice of Early Reading (Vol. 2, pp. 109-132). Hillsdale, NJ: Lawrence Erlbaum Associates.

Liberman, I. Y., & Shankweiler, D. (1985). Phonology and the problems of learning to read and write. Remedial and Special Education, 6(6), 8-17.

Lloyd, L. L., & Karlan, G. R. (1984). Nonspeech communication symbols and systems: Where have we been and where are we going? Journal of Mental Deficiency Research, 28, 3-20.

Lundberg, I., Olofsson, A., & Wall, S. (1980). Reading and spelling skills in the first school years, predicted from phonemic awareness skills in kindergarten. Scandinavian Journal of Psychology, 21, 159-173.

Mastropieri, M. A., Scruggs, T. E., & Levin, J. R. (1985). Maximizing what exceptional students can learn: A review of research on the keyword method and related mnemonic techniques. Remedial and Special Education, 6(2), 39-45.

McKnight, J. C. (1979). Using the manual alphabet in teaching reading to learning disabled children. Journal of Learning Disabilities, 12, 581-584.

Morais, J., Cary, L., Alegria, J., & Bertelson, P. (1979). Does awareness of speech as a sequence of phonemes arise spontaneously? Cognition, 7, 323-331.

Morais, J., Cluytens, M., & Alegria, J. (1984). Segmentation abilities of dyslexics and normal readers. Perceptual and Motor Skills, 58, 221-222.

Myers, C. A. (1978). Reviewing the literature on Fernald's technique of remedial reading. The Reading Teacher, 614-619.

Richardson, E. (1984). The impact of phonemic processing instruction on the reading achievement of reading-disabled children. In S. J. White & V. Teller (Eds.), Discourses in reading and linguistics (pp. 97-118). Annals of the New York Academy of Sciences, Vol. 443.

Tarver, S. G., & Dawson, M. M. (1978). Modality preference and the teaching of reading: A review. Journal of Learning Disabilities, 11(1), 17-29.

VanEtten, C. M. (1979). Sight word vocabulary. In J. E. Button, T. C. Lovitt, & T. D. Rowland, Communications Research in Learning Disabilities and Mental Retardation (pp. 125-140). Baltimore, MD: University Park Press.

Vellutino, F. R. (1979). Dyslexia: Theory and Research, Cambridge, MA: MIT Press.

Vellutino, F. R., Harding, C. J., Phillips, F., & Steger, J. A. (1975). Differential transfer in poor and normal readers. Journal of Genetic Psychology, 126, 3-18.

Vernon, M., & Coley, J. D. (1978). The sign language of the deaf and reading-language development. The Reading Teacher, 32, 297-301.

Vernon, M., Coley, J. D., & DuBois, J. H. (1980). Using sign language to remediate severe reading problems. Journal of Learning Disabilities, 13, 46-51.

Walker, N. M. (1977). Using the deaf alphabet in language experience exercises. Journal of Reading, 21, 7-8.

Wulz, S. V., & Hollis, J. H. (1979). Application of manual signs to the development of reading skills. In R. L. Schiefelbusch & J. H. Hollis (Eds.), Language Intervention from Ape to Child. (pp. 465-489). Baltimore, MD: University Park Press.